GCC Load Shed Planning

2012-04-03

Decision Tree

* = Decided   + = Tentatively decided   - = Suggested starting point
? = Open question   > = Who/how to make decision

1. Improvements to 2011 cooling.
   * Remove the berm. Period.

2. Levels of load reduction.
   + Bakken suggests 30% - 50% - 100%. Start with this assumption and revisit it later.
   * The 50% power-down set must be a superset of the 30% power-down set.

3. Flexibility of power-down list (in case of conferences, etc.)
   * Updates ok as circumstances change, but not on the day of load shed decision.
   > FOD + Stakeholders.

4. Process for invoking load reduction.
   * When defined conditions (Condenser intake, CRAC failures, forecast.) are met.
   * 90 minute notification target through Service Desk channels.
   > FOD, Stakeholders

5. Granularity of load reduction.
   * A whole rack.
   > FOD to decide

   ? Time of day to notify service owners.
   ? Deadline time when FOD cuts affected racks off if not already down.
   ? Weekend action plans?
   > FOD + Stakeholders

Identified Stakeholders

Computing service owners –
  Grid & Cloud Computing   CMS Computing Facilities
  Fermilab Experiments Facilities   HPPC

Computing Customers –
  CDF   CMS   D0   LQCD

  Intensity & Cosmic Frontiers –
    Used computing time recently:
      G-2   MINERvA   MINOS   MU2E   NOvA   NUMI
    MINIBOONE   MIPP   MICROBOONE MARS   MAP
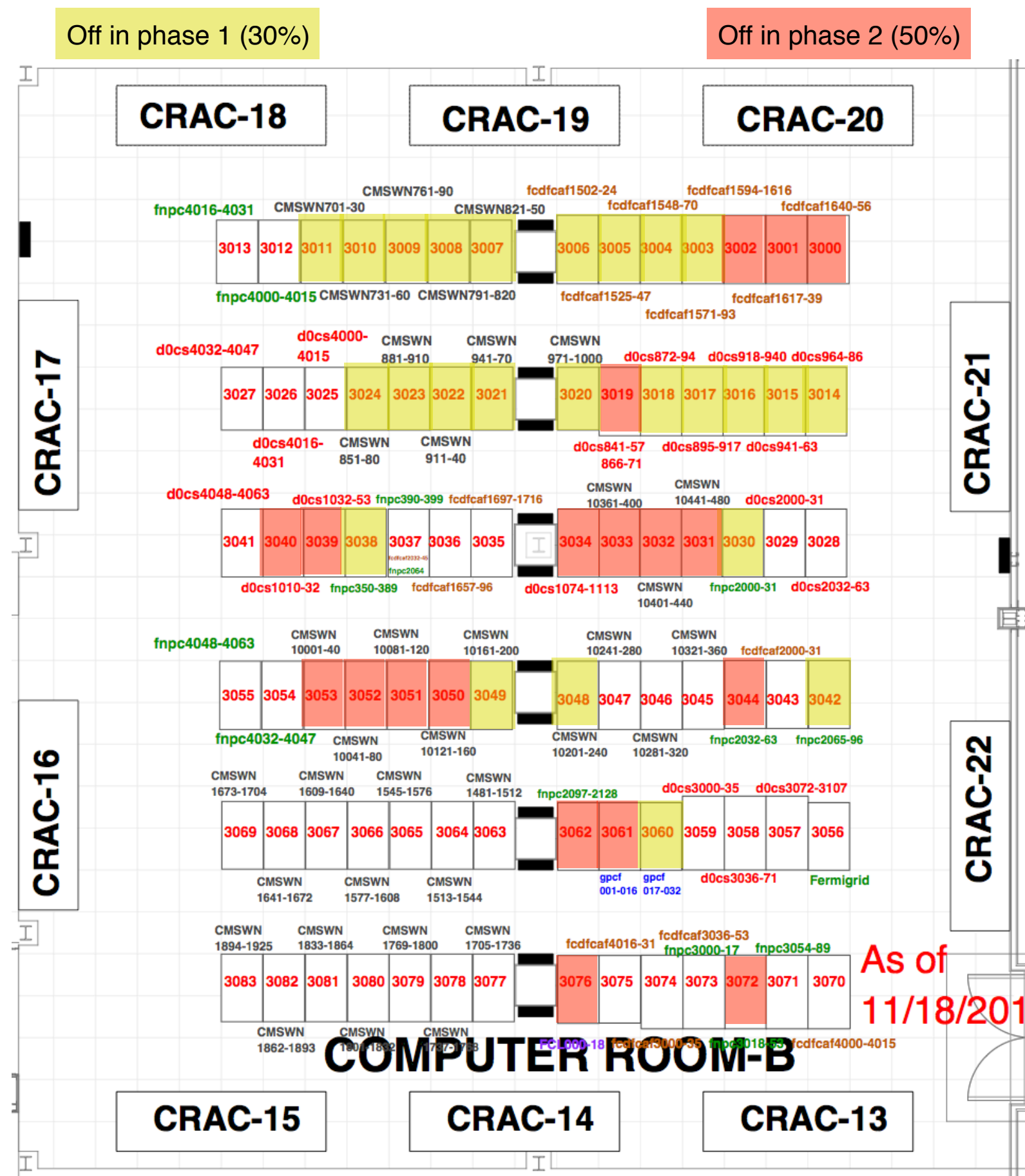   Did not use recently:
      ASTRO   CDMS   COUPP   DES   HOLOMETER
      HyperCP   PATRIOT

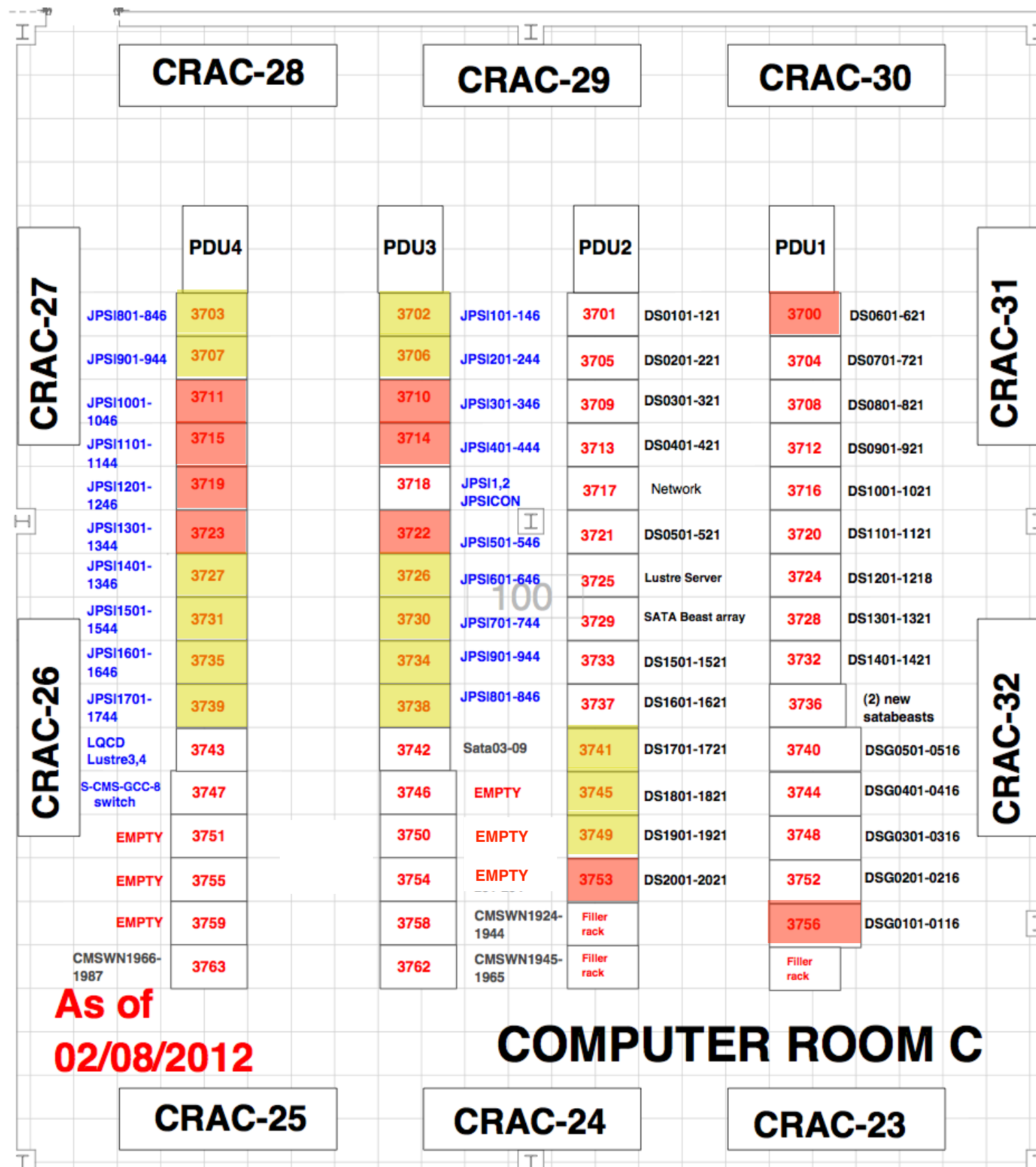# Power-down lists

Apportioned very uniformly across service groups

Power-down lists

* HPPC will try lowering clock speeds to achieve 30% power reduction.

Off in phase 1 (30%)

Off in phase 2 (50%)

CRAC-28	CRAC-29	CRAC-30

CRAC-27 | **CRAC-31**

	PDU4			PDU3			PDU2			PDU1	
JPSI801-846	3703			3702	JPSI101-146	3701	DS0101-121		3700	DS0601-621
JPSI901-944	3707			3706	JPSI201-244	3705	DS0201-221		3704	DS0701-721
JPSI1001-1046	3711			3710	JPSI301-346	3709	DS0301-321		3708	DS0801-821
JPSI1101-1144	3715			3714	JPSI401-444	3713	DS0401-421		3712	DS0901-921
JPSI1201-1246	3719			3718	JPSI1,2 JPSICON	3717	Network		3716	DS1001-1021
JPSI1301-1344	3723			3722	JPSI501-546	3721	DS0501-521		3720	DS1101-1121
JPSI1401-1346	3727			3726	JPSI601-646	3725	Lustre Server		3724	DS1201-1218
JPSI1501-1544	3731			3730	JPSI701-744	3729	SATA Beast array		3728	DS1301-1321
JPSI1601-1646	3735			3734	JPSI901-944	3733	DS1501-1521		3732	DS1401-1421
JPSI1701-1744	3739			3738	JPSI801-846	3737	DS1601-1621		3736	(2) new satabeasts
LQCD Lustre3,4	3743			3742	Sata03-09	3741	DS1701-1721		3740	DSG0501-0516
S-CMS-GCC-8 switch	3747			3746	EMPTY	3745	DS1801-1821		3744	DSG0401-0416
EMPTY	3751			3750	EMPTY	3749	DS1901-1921		3748	DSG0301-0316
EMPTY	3755			3754	EMPTY	3753	DS2001-2021		3752	DSG0201-0216
EMPTY	3759			3758	CMSWN1924-1944	Filler rack			3756	DSG0101-0116
CMSWN1966-1987	3763			3762	CMSWN1945-1965	Filler rack			Filler rack	

CRAC-26 | **CRAC-32**

100

As of 02/08/2012

COMPUTER ROOM C

CRAC-25	CRAC-24	CRAC-23

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Affected Rack Count

Service	Racks	Off @ 30%	Off @ 50%	Proportional share 30%	50%
CDF	13	4	7	4	7
CDF+GP	2	0	0	1	1
CMS	39	12	19	12	20
D0	18	5	9	5	9
FC	1	0	1	0	1
FG	1	0	0	0	1
GP	11	3	6	3	6
GPCF	2	1	2	1	1
LQCD	51	15	26	15	26
NET	1				
empty	9				
Grand Total	148	40	70	41	72

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Next Steps

Now gathering stakeholder buy-in to the shutdown list.

Next: Write down invocation criteria.